



Wastewater Treatment Solutions



Wastewater Treatment Systems
Septic Tanks



Production site in Teningen (Germany) near Freiburg

Water is our element

Solutions to your challenges

GRAF offers an extensive range of products for water resource management. GRAF provides local solutions to global challenges, such as protecting water courses or preventing flooding, with typical German quality.

Environmental products from recycled raw materials

Over 70 % of the raw materials used by GRAF are recycled. In-house recycling of raw materials allows us to ensure consistently high raw material quality and to make all the products in our value-added chain highly sustainable. All GRAF products are also 100 % recyclable.

Global network of sales partners and production facilities!

GRAF products are available worldwide. Sales partners in more than 80 countries help us develop solutions suited to local markets and deliver the customer support needed on the ground.

The manufacturing process is essential for a top-quality product. GRAF is proficient in all established procedures for the manufacture of plastic products. Our production facilities feature state-of-the-art equipment.



GRAF worldwide please visit www.graf.info

GRAF – Setting standards in quality

For 50 years, Otto Graf GmbH has been offering high-class plastic products to its customers. In 1974, GRAF developed its first pioneering range of rainwater harvesting products. Today we are market leader in numerous countries for rainwater harvesting systems.

High Quality Manufacturing

Graf is investing continuously in the expansion of the headquarters in Teningen near Freiburg (Breisgau). The facility has now an approximate area of 155.000 m2 and is one of the most modern production facilities for plastic products in the world.

Our choice of Germany for the new production site was easy. On the one hand, we feel an obligation to the site because of our history. On the other, we would like to offer our customers products of the highest quality.

Logistics Expertise

GRAF products are exported to over 80 countries around the globe. The share of products exported by our company has almost doubled over the last five years. We owe the outstanding loyalty of our customers to unique product quality, great value for money and the distinct service approach we deploy with our trade partners. Well thought-out logistics with short response and delivery times are essential to ensure a high standard of service. GRAF logistics have an impressively high delivery rate of 99 %.

Engineering Expertise

More than 200 registered property rights and countless awards document our work as an innovation leader. These innovations are the growth drivers and basis for our economic success. All GRAF products are designed by our own development department, which brings together all the expertise needed, from design and function to construction and structural analysis.

Our goal: your satisfaction

More than 800,000 satisfied users worldwide already benefit from the advantages of GRAF wastewater treatment.



Production site in Herbolzheim (Germany)



Production site in Neuried (Germany)



Production site in Dachstein (France)

Proven nationwide: GRAF Wastewater Treatment Systems



7 PE one2clean with 90 m² Low Pressure pipe distribution Co, Galway



10 PE one2Clean with pumped Outlet, County Mayo



Installation of Installation of 868 PE oneAdvanced, Dundrum House Hotel



35 PE Klaro Easy, Belfast

You need a wastewater treatment plant? We will help you to understand what needs to be considered!

Wastewater regulation

Northern Ireland

In Northern Ireland it is a legal requirement under Article 7 of the Water Order (NI), to obtain the consent of the Department of Agriculture, Environment and Rural Affairs to make a discharge of sewage effluent from a house or another premises, to a waterway or to the underground stratum.

There are 2 options for off mains discharge:

1. Discharge to a Soakaway (percolation area) with a treatment plant achieving 95 % reduction in BOD
2. Where available, discharge to a water-course after a treatment plant capable of achieving a The reduction is based on the EN12566-3 standards for wastewater disposal

Republic of Ireland

In the Republic of Ireland planning permission from the local authority is required prior to installation or replacement of a septic tank or wastewater treatment plant. Prior to submitting a planning application, a Site Characterisation report is carried out by a qualified and insured Site Assessor, they perform percolation tests on the site which determines the suitability of the site to dispose of the wastewater

It also determines the system requirements (septic tank of wastewater treatment plant) and the percolation area (type & size) this is carried out in accordance with EPA code of practice for Domestic Wastewater treatment 2021. All septic tank and wastewater treatment plants supplied in Ireland must conform with EN12566, Part H of the Building Regulations and NSAI S.R.66.



Any questions?
Please contact us.
+353 935 1765
info@grafireland.ie



Enter Webcode in search field

Q Webcode G5114

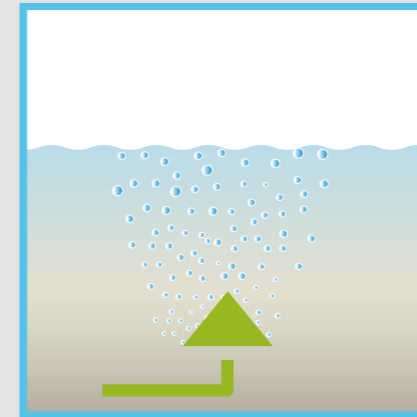
The webcode takes you straight to the information you need.

- Installation instructions
- Dimensional drawings
- Accreditations
- Declarations of conformity



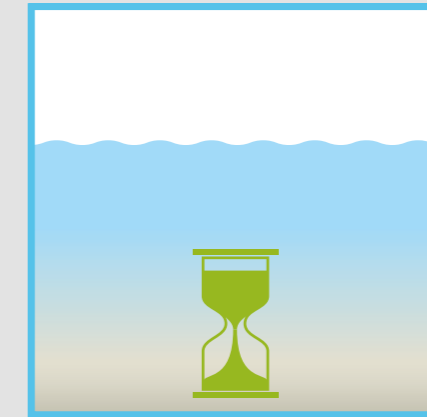
12h
cycle time

1. Aeration phase



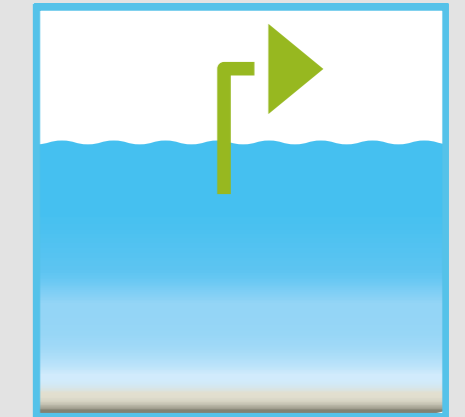
The wastewater arrives directly in the biological zone without the need for pumping processes. Aeration of the entire container leads to immediate wastewater activation. The micro-organisms begin the biological cleaning process without delay.

2. Settling phase



Aeration is interrupted by the control unit, the activated sludge sinks to the bottom. A clear water zone develops in the upper part of the container.

3. Clear water extraction phase



The treated clear water is extracted from the system and the cleaning process can begin once more.

one2clean only needs 3 steps to produce clear water

The wastewater treatment is carried out in one chamber in just one tank. This eliminates unnecessary pumping processes and sludge return.

one2clean is odourless

The entire volume of wastewater is immediately activated with oxygen using the unique one2clean technology. The final process of the one2clean produces an odourless, clear treated water for extraction to soakaway or waterway*.

one2clean already meets the needs of tomorrow

The one2clean wastewater treatment system can achieve sustainable discharge values with an efficiency factor of up to 99%! This offers high investment security – even if legal requirements become stricter.

*Manufacturer's operating and installation instructions must be adhered to

As much technology as necessary, as little technology as possible.

Over the past few years, wastewater treatment systems have experienced impressive technological developments. Today, there are high-tech products equipped with sophisticated controls and various pumps, sensors and valves. Yet this is often to the detriment of the product's reliability. A reliable wastewater disposal system no longer needs to be complicated.

one2clean is an advanced development of the proven SBR wastewater treatment technology, with considerable advantages in terms of operating costs and safety.

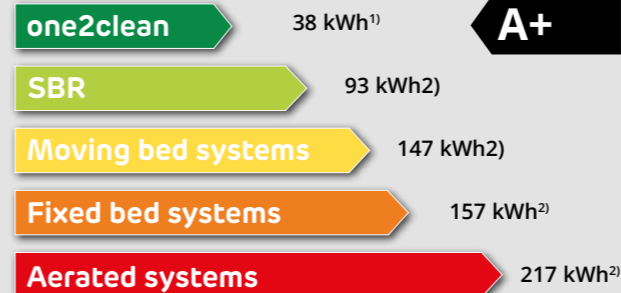


Wastewater treatment system one2clean – smart and simple!

GRAF TV
www.graf.info/v224

Why use the one2clean system?

- **Excellent cleaning performance**
Even during load fluctuations and underload
- **Great value for money**
- **Double sludge storage volume**
- **Low sludge removal money**



1) Calculated value for a 7 inhabitant system at 100% Capacity utilisation per 1 inhabitant/year
2) Annual electricity consumption of various wastewater treatment systems per inhabitant equivalent. Source: Magazine "wwt", issue 6/2007 "Die Kleinkläranlage als Dauerlösung" (The small wastewater treatment plant as a permanent solution), page 15, Table 3 Practical data.

Silent performance guaranteed



75 - 80
DECIBELS



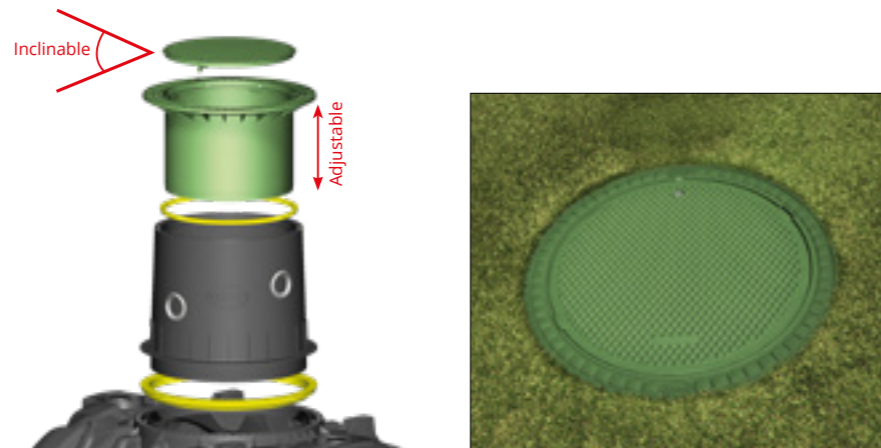
VERY QUIET!

≤ 55¹⁾
DECIBELS

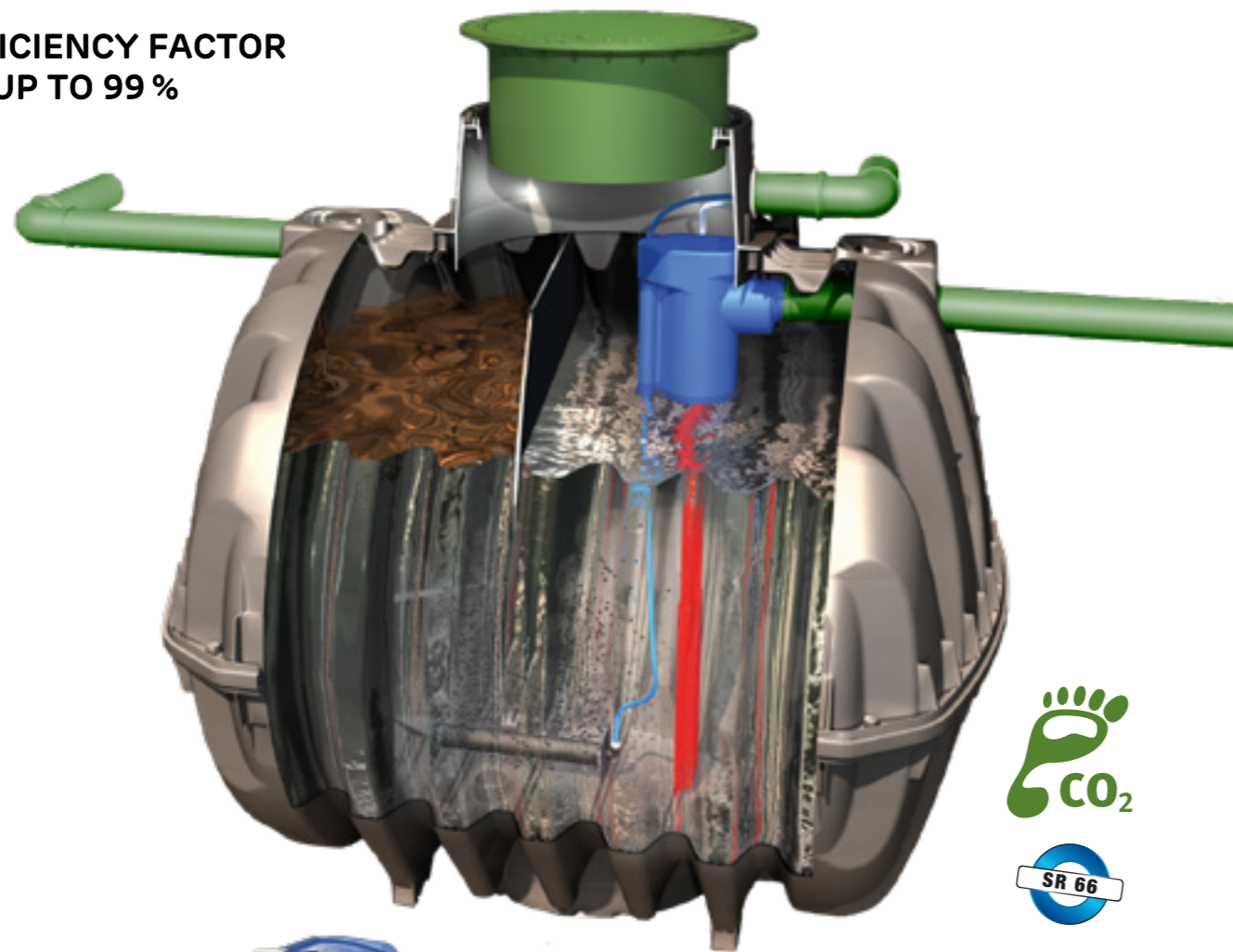
¹⁾Based on internal tests

Cover

- Suitable for pedestrian loading
- Adjustable in height
- Inclined up to 5°
- ✓ Enables flush ground installation
- ✓ Nice looking cover
- ✓ Allows small corrections of height on-site
- ✓ Reduction of installation cost



EFFICIENCY FACTOR OF UP TO 99 %



one2clean control cabinets

- Simple handling thanks to micro-processor control
- Energy-saving
- Extremely quiet



Wastewater tank

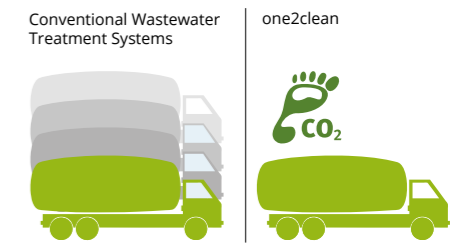
- State-of-the-art manufacturing for maximum stability
- Can be mounted in ground water
- Unique fit accuracy of the components



- ✓ Lightweight
- ✓ Self-anchoring saves installation costs
- ✓ Gravel backfill saves installation time
- ✓ Up to 12 to loading, enables installation under car park (flexible choice of location)
- ✓ 100 % recycled material

Installation kit

- Only one clear water lifter
- Rugged clear water lifter manufactured in one seamless piece
- Simple maintenance via an integrated, self-cleaning sampling container
- No electrical part in the tank



- ✓ Fast installation
- ✓ Saves installation costs
- ✓ Keeps service costs to a minimum
- ✓ Easy access for service company
- ✓ Incredible cost saving due to very low power consumption
- ✓ System can be easily adjusted if required which will reduce costs for technician
- ✓ Incredibly little sewage sludge
 - Reduces running costs
 - Keeps environment clean
- ✓ Flexible selection of the control cabinet's position

One-tank system one2clean

Q Webcode G5104

Inhabitants [max.]	Max. daily flow [l/d]	Max. organic load [kg BOD5/d]	Total volume [l]	Length* [mm]	Width* [mm]	Height [mm]	Weight [kg]
5	750	0.30	3,750	2280	1755	1880	150
7	1,050	0.42	4,800	2280	1985	2110	185
9	1,350	0.54	6,500	2390	2190	2390	220

Two-tank system one2clean

Q Webcode G5104

Inhabitants [max.]	Max. daily flow [l/d]	Max. organic load [kg BOD5/d]	Total volume [l]	Volume [l]	Length* [mm]	Width* [mm]	Height [mm]	Weight [kg]
10	1,500	0.6	7,500	2 x 3,750	5160	1755	1880	300
14	2,100	0.84	9,600	2 x 4,800	5160	1985	2110	370
18	2,700	1.08	13,000	2 x 6,500	5380	2190	2390	440

System	one2clean
System conformity	EN 12566-3
Purifying technology	fully biological SBR lifting technology
One-tank systems available up to	9 inhabitants 1,350 l/d
Two-tank systems available up to	18 inhabitants 2,700 l/d
Maintenance interval	1 - 2 per year
Warranty for underground tank	10 years
Warranty for purifying technology	2 years

Parameter		
COD (chemical oxygen demand)	94.2 %	43 mg/l
BOD ₅ (biochemical oxygen demand)	98.0 %	7 mg/l
SS (suspended solids)	96.3 %	14 mg/l
NH ₄ -N	98.3 %	0.5 mg/l
N _{total}	87.0 %	7.9 mg/l
P _{total} (with +P Modul)	-	-
eColi _{HI} (with +H Modul)	-	-

Results of practical testing undertaken by the Prüfinstitut für Abwassertechnik (Testing Institute for Wastewater Technology), Aachen



**CORROSION-FREE
THANKS TO
PLASTIC-LID**

**Telescopic dome shaft 600 car
plus 140 mm – 440 mm (5.51 – 17.3")
earth covering**



Inspired by nature

- ✓ Suitable for vehicle loading – with childproof plastic lid cover up to 3.5 t
- ✓ Weight: 22,5 kg (50 lbs)
- ✓ Adjustable earth covering across upper tank surface
- ✓ Perfect fitting accuracy

Telescopic dome shaft 600 suitable for vehicles



**External plastic cabinet S
For 3 – 18 inhabitants (up to
2,700l/d)**

- ✓ Flexible application of the proven one2clean control cabinet in a plastic external column
- ✓ Weather-resistant plastic
- ✓ Edge seal for complete sealing over the ground
- ✓ High corrosion protection for the electrical parts
- ✓ Good value for money
- ✓ Easy assembly
- ✓ No foundation necessary
- ✓ Easy access and integrated double power socket for maintenance

The image shows the External plastic cabinet S for 3 – 18 inhabitants



Extension 300 mm

- ✓ The earth covering can be raised 300 mm using the extension
- ✓ DN 630

Extension 1000 mm

- ✓ The earth covering can be raised 1000 mm using the extension
- ✓ DN 630

Pump shaft

- ✓ Integrated pumped outlet option
- ✓ Overflow guard with audible alarm
- ✓ Plug and play operation
- ✓ Compatible with all percolation types
- ✓ DN 400 or DN 630

Technical data

For air compressors	XP 80, HP 100-200
Upstream fuse	B16A (provided by customer)
Voltage supply	230 V AC ± 20 %, 50 Hz
IP	230 V AC ± 20 %, 50 Hz
Relative air humidity	10 to 95 %
Temperature range	-25°C to +50°C
Total weight	7 kg (15.4 lbs)
Connecting line	via two-pin earthed plug

Compatibility

one2clean	3 – 18 PE
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Polishing filter

Low pressure network pipe kits

GRAF Ireland offer complete pipe kits for pump discharge pressurised pipe networks, also known as pumped distribution systems. The low pressure networks work by distributing the pumped discharge from a sewage treatment plant or a septic tank through a series of small diameter pipes that are pre drilled with small holes to allow the water to drain from the pipes, as per the EPA code of practice.

The low pressure network is placed on a 300 mm stone bed covered with geotextile over suitable soil sub layers. A minimum of 300 mm of topsoil is then placed on top of the geotextile. Low pressure networks are needed due to difficult site conditions for example, high water table, insufficient subsoil depth and poor soil percolation. GRAF offer the full kit including rising main, non-return valves, distribution pipes, flush valves and geotextile and full installation can be provided by the GRAF specialist team.

In case of strict effluent quality requirements or high influent load variations, the GRAF tertiary filter modules (Sand filter module or E-Chlorination module) are recommended to enhance and stabilize the purification performance of your sewage treatment system.

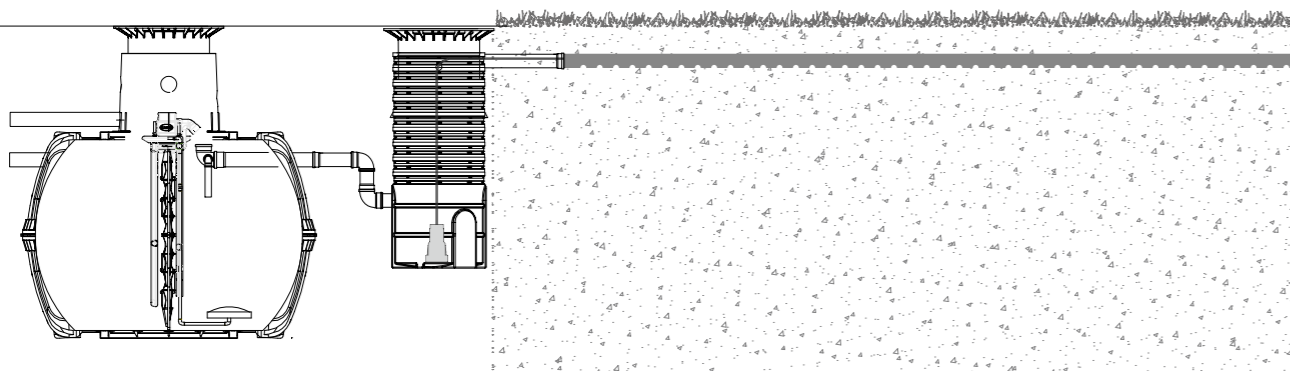


Comparison – polishing filter

Treatment plant for a 4 Bedroom house requires with

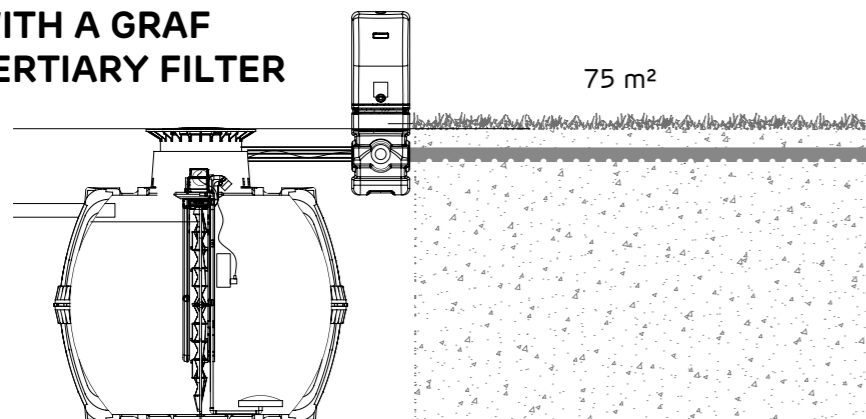
A soil polishing filter

150 m²



WITH A GRAF TERTIARY FILTER

75 m²



- ✓ Less space
- ✓ Less working hours
- ✓ Less costs

Tertiary filter

Sand filter

- ✓ Self cleaning and nearly no maintenance
- ✓ Requires only ½ m² footprint of your garden
- ✓ Less installation time
- ✓ Less costs

The self cleaning dual media filtration system reduces suspended solids, COD and BOD of the secondary clarified effluent additional and may also serve to prevent debris in downstream installed storage or collection tanks for the re-use of wastewater. Patented, simple and valve-free setup with automatic gravitationally driven backwash for minimal maintenance requirements.

- Easy to operate
- Patented
- Simple and valve-free setup with automatic gravitationally driven backwash for minimal maintenance requirements
- Requires only 1 m² space
- Treatment efficiency:

COD	29,7 %
BOD5	47,7 %
SS	64,2 %



E-Chlorination

- ✓ Enables flush ground installation
- ✓ Your garden will not be affected at all
- ✓ Controllable chlorine dosing
- ✓ Fulfills future requirements of EPA

Disinfection using the +H module by chlor satisfies even the most stringent of purity requirements for a GRAF wastewater treatment system. It reliably kills off germs and microorganisms. The clarified water therefore complies with the EU Bathing Water Directive.

- Easy to operate
- Maintenance-friendly thanks to easy-to-remove module
- Fitted in downstream shaft
- Treatment efficiency:

COD	11,7 %
BOD5	24,1 %
SS	41,4 %
Ammonia	14,4 %
E. coli	99,9 %
Faecal coliforms	99,9 %
Total coliforms	99,9 %



OneAdvanced wastewater treatment systems

Special requirements

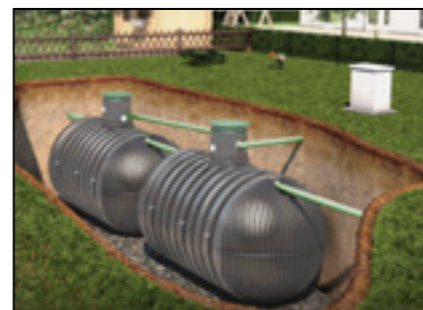
Systems for more than 50 inhabitants work on the same principle as small wastewater treatment systems and use the SBR process. Because of the special requirements involved, all systems for more than 50 inhabitants are planned as individual projects. Our experienced team of engineers and technicians will help you to plan your project. We take all local circumstances into account from the concept planning phase to implementation.

To plan your system, we need the following information:

- What type of project? (Domestic, hotel, commercial etc.)
- How many people will use the system and what is the water consumption per head?
- What legal requirements apply to wastewater at the location?
- Local power grid

The proven options of the advanced wastewater treatment systems are also available on request for large systems.

Options



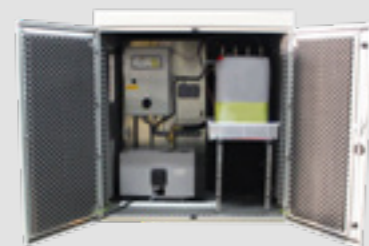
[Q Webcode G5114](#)

Inhabitants [max.]	Max. daily flow [l/d]	Max. organic load [kg BOD5/d]	Volume [litres]	Length* [m]	Width* [m]
25	3,750	1.50	4x 4,800	10620	1985
35	5,250	2.10	4x 6,500	12360	2390
50	7,500	3.00	2x 16,000	12360	7950
75	12,250	3.60	2x 22,000	9900	2500
90	13,500	5.40	2x 22,000	12900	2500
100	15,000	7.20	2x 22,000	12900	2500
150	22,500	9.00	2x 32,000	17700	2500
200	30,000	10.80	4x 22,000	26400	2500
250	45,000	15.00	1x 52,000 / 2x 32,000	13300	8700
300	45,000	18.00	1x 52,000 / 2x 32,000	13300	8700

External control cabinets



External plastic cabinet L



External steel cabinet XL



External steel cabinet XXL



oneZero - Septic Tank Two chambers

Benefits

- ✓ Low weight: can also be installed in difficult local conditions without a crane
- ✓ Low maintenance: maintenance or cleaning work can be performed through the shafts
- ✓ Tanks can be used as rainwater harvesting systems after thorough cleaning

Floating and removable material is extracted from domestic wastewater in mechanical wastewater tanks. This is purely mechanical cleaning.



12566-1*
Hydraulic efficiency 99.9 %
*Refer to the installation instructions for CE-compliant Septic tanks

Presenting the Carat septic tank
GRAF TV
www.graf.info/v213

[Q Webcode G5504](#)

Inhabitants [max]	Total volume [l]	Capacity [l]	Length [mm]	Width [mm]	Height [mm]	Weight [kg]
5	2,700	2,700	2080	1565	2010	145
7	3,750	3,750	2280	1755	2200	175
9	4,800	4,800	2280	1985	2430	220
13	6,500	6,500	2390	2190	2710	260

Scope of supply: Carat S underground tank with baffle. Also available without baffle as a one-chamber wastewater tank

oneSeph - Grease separators

Grease separators are needed wherever water is contaminated with fats and oils of natural origin. This concerns for example the following operations:

- Kitchen facilities and industrial kitchens (restaurants, hotels, etc.)
- Food distribution points with return dishes
- Meat and sausage processing plants (e.g. slaughterhouses, butcheries)
- Oil processing plants (e.g. oil mills)
- Plants for the production of ready meals

Plastic – clear advantages over concrete because of their low weight, separators made of plastic can be installed without heavy equipment. This allows easy transport and installation even in places that are difficult to access.



Saphir grease separator

[Q Webcode G5605](#)

NS [l/s]	Connection [DN]	Grease [litres]	Sludge [litres]	Total [litres]
1 - 200	110	200	200	500
2 - 200	110	200	200	500
2 - 200	110	300	200	730
2 - 400	110	200	400	730
2 - 500	110	300	500	1.025
4 - 500	110	300	500	1.025



Diamant grease separator

[Q Webcode G5606](#)

NS [l/s]	Connection [DN]	Grease [litres]	Sludge [litres]	Total [litres]
4 - 700	160	350	700	2.070
7 - 700	160	350	700	2.070
10 - 1500	200	600	1.500	3.160
15 - 1500	200	600	1.500	3.160

for a greener planet

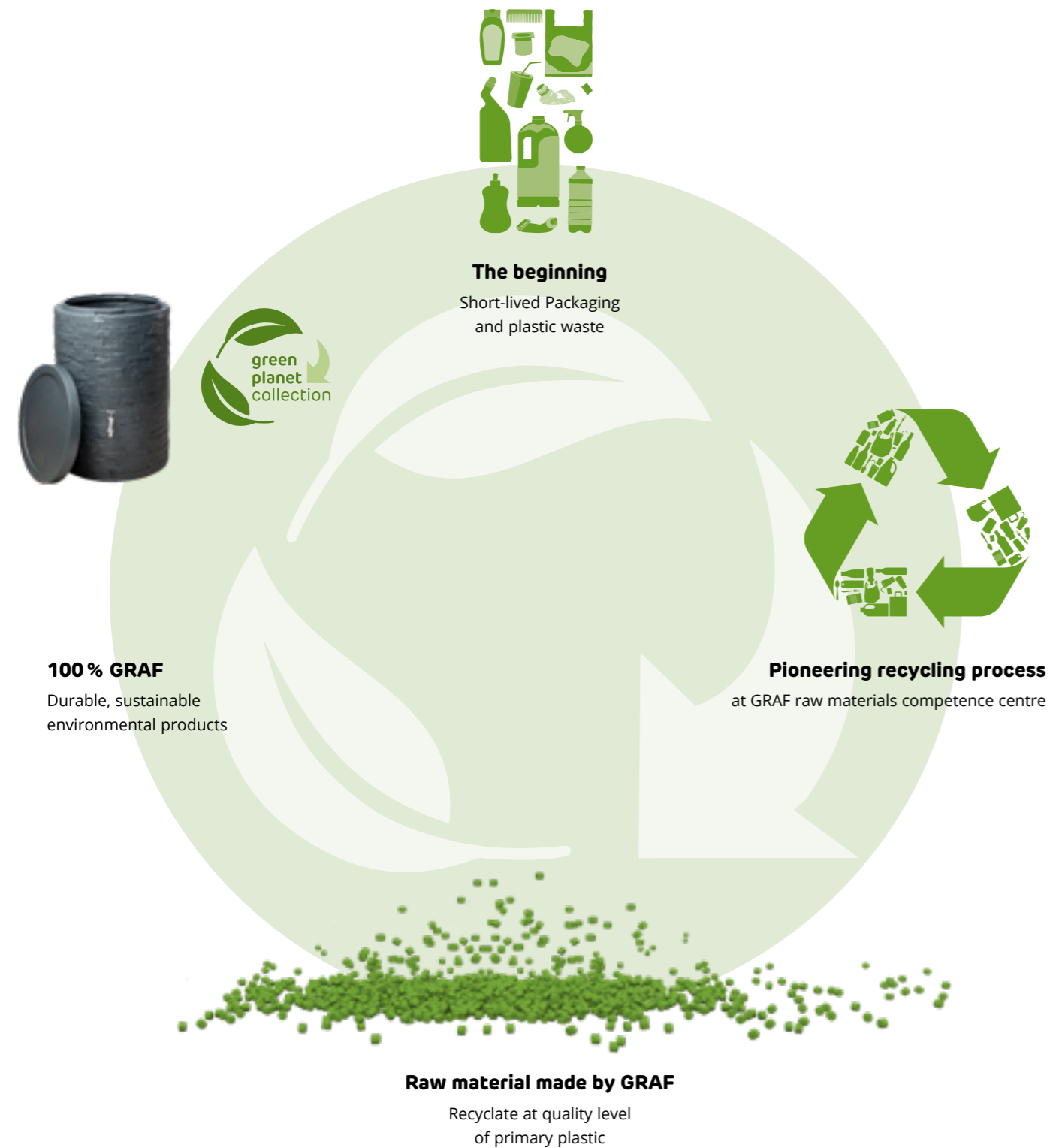
Climate change. Our world is currently facing huge challenges. In these times, we need role models. Inspirers who not only preach sustainability, but also put it into practice. Just as we at GRAF are already making an important contribution. After all, it's not just our solutions for rainwater management and other water-related applications that are sustainable through and through. The recycling plastic from which we manufacture our products is also sustainable.

For example, we turn short-lived food packaging into an EcoBloc infiltration module that lasts for generations. This is how we can make our cities a little safer against increasing heavy rainfall events. Or rainwater tanks that allow us to water our gardens with a clear conscience, even during hot spells. Quite incidentally recycling saves us about 100,000 tonnes of CO₂ every year – as much as more than 60,000 cars emit.

By the way: we recycle our products ourselves. Our raw materials competence centre makes us unique. It is our heart, which not only contains all our innovative power, but also our lifeblood. For a better world for all of us – for a greener planet.




The GRAF recycling cycle



This is us

The whole world is talking about sustainability. For us, it has long been a natural part of our DNA. We recognized the potential of rainwater early on: „Rainwater is free“ was one of our first campaigns back in the 1970s. Rain barrels were produced in our family business as early as 1974. The first underground tanks for rainwater harvesting followed just four years later. GRAF rain barrels have been made from recycled material since 1980. By the way, rainwater is still free of charge. But in times of climate change, drought and heavy rain, sustainable water management is much more than that: it is a valuable contribution to our future.


For this we stand




75 %
share of recycling material




Environmental products for
SUSTAINABLE
water management




100.000 TONNES CO₂ savings
every year as much as more than
60,000 cars emit



LONG SERVICE LIFE
and spare parts supply




Recycling material
FREE FROM POLLUTANTS



80 % share of renewable
energies in production



Products
FULLY RECYCLABLE



State-of-the-art production
facilities for **LOW ENERGY**
CONSUMPTION

For further information see:
www.graf.info/sustainability





Garden catalogue

For more information about our garden products, ask for our catalogue.

Please note:

Information on all products and systems in this brochure is subject to changes and errors. Pictures and photographs are approximate only. The applicable technical documentation for the products shall control, which we will be happy to send you on request.

All offers, deliveries and services are subject to our general terms and conditions, which we will also be happy to send you.

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SEPARATORS



GARDEN PRODUCTS & MULTI-PURPOSE CONTAINERS



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